STAFF REPORT

UPDATE REGARDING THE REGULATION OF FOOD PROCESSING WASTE DISCHARGES TO LAND

The purpose of this Information Item is to provide information to Regional Water Board members regarding the water quality issues facing the food processing industry, to update the Board as to staff's activities with regard to regulating food processors during the last year, and to allow an opportunity for the public to provide comments to the Board.

Background

Solid and liquid wastes from food processing industries (including canneries; meat, fruit, and vegetable packers; cheese manufacturers; and wineries) contain significant quantities of organic matter, nutrients, and salts. As shown in the table below, food processing wastewater is typically much higher strength than domestic wastewater, and therefore has a higher potential to adversely impact water quality and to create nuisance conditions. While the table contains data for winery wastewater, other types of food processing wastewater also contain extremely high concentrations of BOD, TDS, and nitrogen.[1]

Constituent	Untreated Winery Wastewater[2]	Untreated Domestic Wastewater[2]
PH	2 - 11	6 - 8
Biochemical oxygen demand (BOD)	300 – 30,000	100 - 400
Total dissolved solids (TDS)	80 – 7,000	250 – 1,000
Total nitrogen	1 - 225	20 - 50

There are at least 640 food processors within the Central Valley Region that discharge to either land or surface water. They may be categorized by their method of waste disposal, as follows:

- 119 processors discharge directly to Publicly Owned Treatment Works (POTWs), that are regulated by federal NPDES permits or by individual waste discharge requirements (WDRs);
- 212 processors discharge to land, and are regulated under individual WDRs issued pursuant to the California Water Code (CWC);
- 62 processors discharge to land and are enrolled under Order No. R5-2003-0106, the *Waiver of Waste Discharge Requirements for Small Food Processors*[3]; and
- Approximately 250 wineries plus an unknown number of other food processors discharge to land, but have not submitted Reports of Waste Discharge (RWDs), as required by the CWC.

The subject of this informational item is the Board's regulation of the 520 facilities listed above (the last three bulleted groups) which discharge food processing waste to land. These processors discharge both liquid and solid food processing waste. Industry generally refers to the former as "food process/rinse

[1] Determined through review of food processing dischargers' self-monitoring reports.
[2] Data taken from Reports of Waste Discharge and dischargers' self-monitoring reports.
[3] Applicable to those food processors who discharge less than 100,000 gallons of wastewater per year and apply it to cropland at agronomic rates, as well as to food processors who tank and haul all wastewater to a permitted treatment facility.

waters" and the latter as "food process byproducts/residues". The majority of the following discussion applies to liquid discharges, as these typically have a greater potential to impact water quality. When the discussion specifically refers to solid food processing waste, the text will so state.

In the past, the Central Valley Region's focus in permitting the land discharge of food processing waste (through WDRs or waivers) has been to ensure that the wastes were applied at rates that were thought to (a) allow organic matter to be broken down by microorganisms within the soil, (b) allow nutrients to be taken up by the crops grown on the disposal ground, and (c) prevent nuisance odor and vector conditions. In part, staff used guidelines prepared by the industry in the 1970s to determine adequate loading rates. For many years, staff provided very little oversight because the prevailing notion was that the soil beneath the disposal site would provide natural attenuation of the waste, sufficient to protect water quality. Consequently, few dischargers were required to monitor groundwater. However, the resulting data, while sparse, raised concerns about the potential impacts to groundwater from the land discharge of food processing waste. This eventually triggered an increase in the number of sites at which groundwater monitoring was required. This data revealed widespread groundwater impacts from salinity, as well as from decomposition byproducts, and prompted increased staff oversight. This increased oversight was also due in part to Senate Bill 390 (1999), which caused all Water Board waivers to sunset, and to the Central Valley Region's Consistency Initiative, which required an evaluation of program consistency within and between Regional Water Board programs and offices and with plans, policies, and State Water Board directives.

The widespread number of groundwater impacts caused staff to investigate the scientific basis upon which many of the industry-derived waste loading rates were developed. Staff discovered that the scientific research of these rates did not include their long-term effectiveness in protecting water quality. Further, staff inquiries into how food processing waste discharges were regulated by other regional water boards, as well as other states (e.g., Idaho, Washington, and Wisconsin) confirmed that land application practices occurring in the Central Valley Region would not be allowed by these other regions and states.

In late 2004, staff reviewed the groundwater monitoring data from the 105 food processing facilities that had been required to install groundwater monitoring wells, and found that a large number of these sites are either polluting or degrading groundwater. From this evaluation, it became obvious that natural attenuation of waste at established loading rates does not protect water quality in all cases, and that the industry guidelines, as well as the waste discharge requirements adopted by the Regional Water Board, were allowing food processing discharges to take place in a manner that conflicts with existing State policies.

28 January 2005 Informational Item *Regulation of Food Processing Waste Discharges to Land*

In March 2000, staff first notified the Regional Water Board of our concern about the impacts of food processing waste by presenting the informational item *Effective Regulation of Discharges of Food-Processing Waste*. In 2004, several Regional Water Board members asked for an update, and at the 28 January 2005 Board meeting, staff presented the informational item *Regulation of Food Processing Waste Discharges to Land*. As part of this presentation, staff prepared an extensive staff report. This report was distributed to more than 300 known interested persons prior to the Board meeting, and is

found on the Regional Water Board's Internet site at
http://www.waterboards.ca.gov/centralvalley/available_documents/index.html#anchor618298.

The 2005 staff report describes the water quality impacts associated with the disposal of food processing waste; the Central Valley Region's past regulatory focus; the sunset of waivers and the impact of the Regional Water Board's Consistency Initiative; problems from our past regulatory methods; case studies of four facilities that are polluting groundwater; and the extent of known and suspected groundwater pollution from food processors in the region. Finally, the staff report provides a long-term vision for the proper regulation of food processors. As part of that discussion, the report contains examples of three facilities that have invested in the upgrades necessary to manage their waste in a manner that protects water quality.

A key component of the Informational Item was staff's review of the effectiveness of existing waste discharge requirements to protect water quality from the discharges of food processing waste. We reviewed the monitoring data submitted by food processors within the Central Valley, and found that the waste discharged from certain facilities has not only threatened the beneficial uses of underlying groundwater, but in many cases has polluted the groundwater. Of the 212 facilities which discharge to land under individual WDRs, 105 sites are required to monitor the groundwater. Staff's review found that the discharge of waste from 90% of these monitored sites had either confirmed or suspected impacts to groundwater. This statistic alone shows that the Central Valley Region's previous reliance on industry-derived loading rates and soil attenuation to treat and dispose of food processing waste and protect groundwater quality was a flawed strategy, and that it is appropriate to require individual and scientific accountability such that land application at any given site can be conducted consistent with all applicable State plans, policies and regulations.

Of the 212 food processors permitted under individual WDRs within the Central Valley Region, only about half are currently required to monitor the groundwater. While groundwater monitoring may not be necessary at all of the sites (the requirement is based on site-specific conditions), staff will be evaluating the remaining sites and then updating the monitoring and reporting programs as necessary to include groundwater monitoring upgradient and downgradient of waste storage and disposal areas.

The Information Item describes staff's conclusion that proper regulation of each individual food processor should be based on site-specific conditions and existing regulations, plans and policies, and in general should entail the following phased steps:

1. Reviewing, and if necessary updating, individual facilities' Monitoring and Reporting Programs to the level of detail need to determine whether they are complying with all aspects of their waste discharge requirements, including the Groundwater Limitations. In general, this means determining whether a facility is unreasonably impacting water quality through the installation and sampling of groundwater monitoring wells.

2. If groundwater degradation is either threatened or documented, requiring (through issuance of revised WDRs or an enforcement order) that the discharger comply with the Regional Water Board's Water Quality Control Plan (Basin Plan), by meeting water quality objectives and protecting beneficial uses, and with State Water Board Resolution No. 68-16 (the

Antidegradation Policy) by implementing best practicable treatment or control measures to limit degradation to what is reasonable and consistent with the State and Regional Board policies. If the discharger is unable to modify the discharge such that it does not unreasonably degrade or pollute groundwater, then the site should be regulated under Title 27 California Code of Regulations, Division 2, Subdivision 1 (Consolidated Solid Waste Regulations).

3. If groundwater has been unreasonably degraded or polluted, issuing a Cleanup and Abatement Order that requires the discharger to remediate the groundwater consistent with Water Code Section 13304 and State Water Board Resolution No. 92-49 (the Cleanup Policy).

The California Water Code, Title 27, and the two cited State Board resolutions authorize and direct these three actions. Staff has not proposed any new policy or regulation, or any new interpretation of existing policies and regulations. Since staff and the Regional Water Board are implementing existing policies and regulations, no new review pursuant to the Administrative Procedures Act is required. Each action described above is site-specific and, as always, staff will comply with all applicable public notice requirements for each action. Staff is also required to implement the State Water Board's progressive enforcement policy; in doing so, staff attempts to work cooperatively with a discharger prior to preparing enforcement actions. If an enforcement action is necessary, then a discharger has the opportunity for a public hearing and, if necessary, review by the State Water Board of any Regional Water Board action. Consistent with Regional Water Board policy, staff is consistently implementing existing policies and regulations at food processing facilities in order to fulfill this agency's mandate to protect water quality from discharges of waste.

Actions Taken Since January 2005

Since the January 2005 informational item, staff has continued meeting with two major industry groups (the California League of Food Processors and the Wine Institute), as well as other interested persons, and have responded to several legislative and State Water Board requests. Staff is working with Stanislaus County to prepare a tentative waiver of WDRs for the persons who apply *solid* food processing wastes to land in that county. As for regulating individual food processors, staff has updated several monitoring and reporting programs, is continuing oversight of sites already under enforcement orders, and is continuing to prepare WDRs for those sites that have submitted RWDs. Staff is also requesting RWDs from the existing, un-permitted sites (i.e., the 250 non-complaint wineries), as time permits.

It is noted that the Regional Water Boards have been directed by CalEPA and the State Water Board to emphasize enforcement actions throughout all programs and offices. With regard to food processors, this means that staff is focusing on those sites currently regulated by WDRs whose waste discharge is polluting or unreasonably degrading the groundwater. As time permits, staff will continue to review individual food processors' monitoring and reporting programs to determine whether they need updating to require groundwater monitoring and/or more comprehensive waste or [JLK1]land disposal monitoring. Our goal is to ensure that the regulated dischargers comply with their waste discharge requirements.

Specific major actions undertaken since January 2005 are as follows:

1. **February 2005 Senate Committee on Agriculture hearing**. On 15 February 2005, the Senate Committee on Agriculture convened an informational hearing to discuss "impacts of recent regulatory strategies proposed by the Central Valley Regional Water Quality Control Board for food processor waste discharges to land." Board Chair Robert Schneider and staff provided verbal testimony as well as written information. Testimony was also received from Supervisor Jeff Grover (Stanislaus County), Sonya Harrigfeld (Stanislaus County Environmental Resources Director), Undersecretary A.J. Yates (California Department of Food and Agriculture), Bill Lyons (Mapes/Dos Rios Ranches), Ed Yates (California League of Food Processors), Jim Mortenson (Del Monte Foods), and Mike Falasco (Wine Institute). Senator Denham concluded the hearing by requesting additional information from staff, which was provided in letters dated 28 February 2005 and 10 May 2005.

2. **April 2005 meeting with the California League of Food Processors (CLFP)**. Staff has previously provided comments on both the draft and final versions of the CLFP's *Manual of Good Practice for Land Application of Food Process/Rinse Water*. Staff has consistently stated that the document should describe that the criteria for evaluating the effectiveness of land treatment is (a) the maximization of soil treatment and (b) the minimization of groundwater degradation and prevention of pollution. Many of staff's specific comments and concerns were not addressed in the final document; in particular, the Manual was limited to general suggestions as to achieving best practicable treatment and control of organic matter and a general statement on salt constituents. CLFP itself indicated that the Manual is less effective than envisioned because it lacks a full endorsement by Regional Board staff. Staff and members of the CLFP met in April 2005 to discuss shortcomings of the Manual and an approach to revisions that would (a) accurately reflect existing regulations and policies and (b) identify systematic steps to evaluate wastewater control practices that, if implemented at a site, will ensure consistency with water quality policies. We agreed to meet again with CLFP consultants and then to discuss specific revisions to the Manual no later than October 2005, to be followed with joint informational workshops when the Manual was complete. However, CLFP was unable to meet this schedule. In December 2005, CLFP reinitiated discussions, and has recently proposed a structured workshop with technical experts from universities and stakeholders. This would be the initial vehicle for resolving issues and for the identification of a process and timeline, including possible research, to address the remaining issues. The workshop is under discussion for late March.

3. **July 2005 State Water Board Workshop**. In part due to the food processing industry's response to the Regional Water Board's January 2005 Informational Item, on 11 July 2005 the State Water Board held a *Workshop to Receive Comment on Practices for the Management and Disposal of Food Processing and Winery Waste Through Land Application and Other Means*. In addition to providing written comments prior to the workshop, the Executive Officer and staff attended and made a presentation. The workshop notice stated that testimony was to revolve around six questions including whether the land application of food processing wastes threaten groundwater quality and beneficial uses of groundwater, whether there should be statewide consistency in regulating food processing wastes, whether food processors should be encouraged to develop best management practices, and whether there are economical methods to address the food processors' saline discharges. As a result of this workshop and other matters, on 31 January

2006, the State Water Board held a joint Regional Board – State Board workshop on salinity issues within the Central Valley (see Item #7, below).

4. **Wine Institute Study.** Staff had previously commented on both the study design and drafts of the Wine Institute's *Land Application of Winery Stillage and Non-Stillage Process Water Study Results and Proposed Guidelines.* During 2005, the document underwent a peer review facilitated by the State Water Board. The peer review was critical of the study, and the Wine Institute has recently prepared a response. Staff is continuing to meet with State Water Board staff and the Wine Institute to follow-up on the peer review. While staff supports the objectives of the study, it should be pointed out that only a small number of the largest wineries dispose of waste in the manner studied by the Wine Institute. Staff's main concerns with the *Guidelines* are that (a) intensive monitoring and feedback are necessary to maximize the treatment of wastewater by fallow land and, more importantly, (b) the study shows that land treatment methods are not sufficient to prevent elevated levels of salt and decomposable waste constituents from moving through the vadose zone and into the underlying groundwater. In recognition of the salt issue, the Wine Institute is now conducting a wastewater salt loading study, in which the waste streams from individual winemaking processes will be analyzed and management practices will be proposed to reduce the quantity of salt in the wastewater applied to land.

5. **Waiver for Solid Food Processing Waste in Stanislaus County.** At the January 2005 Regional Water Board meeting, Stanislaus County presented information regarding its program to regulate the discharge of solid food processing waste within the county. The County also requested that the Board delegate responsibility for direct regulatory oversight of the individual operations to the county, and to formally waive WDRs for the individual entities that are permitted by the County. In response, staff has spent considerable time reviewing the County's program and meeting with the County and other interested parties. A draft waiver was transmitted to the County in October 2005, and following revisions, was sent out for a formal public review period in November. The County requested that the item not be heard at the January Board meeting, and staff agreed to a delay. Staff met with the County again, and made additional revisions to address the verbal concerns expressed during the meeting. The revised tentative waiver was mailed out for a second public comment period in January 2006. After meeting with the CLFP and the County on 9 February, staff are proposing to remove the waiver from the Regional Water Board's March agenda, revise the document to incorporate comments received (including the proposal of an industry-sponsored task force), and then circulate the waiver for another public comment period. Staff anticipates that the proposed order will contain a set of conditions under which solid food processing waste may be applied to cropland in a way that assures that water quality is protected and nuisance conditions are not generated. The waiver under development is necessary to replace the previous general waiver that expired in 2003 as a result of SB 390 (which amended Water Code section 13269).

6. **Office of Chief Counsel Q&A Document.** As an outcome of the State Water Board's 11 July 2005 workshop, the State Water Board's Office of Chief Counsel was asked to prepare an analysis, in question-and-answer format, regarding the regulation of food processing wastes. In staff's view, the main point of contention was whether, based on site-specific conditions, certain food processing wastes should be considered "designated waste" and should therefore be

regulated under Title 27 of the California Code of Regulations. For example, this issue would come up in a case where a winery has discharged high strength waste to unlined ponds, resulting in groundwater pollution. On 23 January 2006, the Office of Chief Counsel released a document entitled *Food Processing Questions and Answers*. With regard to applying Title 27 to food processing wastes, the document states that the regional boards will "generally" not apply Title 27, due to the exemptions listed in Section 20090(b), (c), and (f) of the regulations. However, if a food processing waste meets the definition of designated waste in Section 13173 of the Water Code (i.e., the waste causes or threatens to cause pollution, considering site-specific factors of the discharge), then the exemptions in Title 27 are not generally considered to apply. The exemptions in Title 27 are not intended to apply to waste that will cause or threaten to cause pollution. Based on the information collected at food processing facilities, the discharge of waste at a large percentage of existing food processing facilities has caused pollution or is likely to cause pollution, and, would, therefore, meet the definition of "designated waste". In such cases, it would be appropriate to regulate the waste in the manner prescribed by Title 27. In practice, the Regional Water Board has adopted individual enforcement orders allowing the discharger a time schedule to either treat the waste such that it is no longer designated or to submit a RWD for Title 27 WDRs. It is up to the discharger to choose which direction it wishes to pursue.

7. J**anuary 2006 joint State Water Board/Central Valley Regional Board *Public Workshop on Salinity Issues in the Central Valley*.** Salinity is widely recognized as a significant threat to both surface water and groundwater quality in the State. As surface and groundwater supplies become scarcer, and as wastewater streams become more concentrated, salinity impairments are occurring with greater frequency and magnitude. In recognition of this fact, the State Water Board held a joint workshop with the Regional Water Board to gather information and discuss the issues. Many different interest groups, including food processors, attended the workshop and provided testimony. The workshop concluded with the formation of a committee, chaired by Dr. Karl Longley, to study and develop solutions to salinity issues. This study is expected to affect the treatment and disposal of food processing wastes. Regional Board staff will help to identify problems and provide solutions to protect water quality.

8. **Staff's Regulatory Actions**. The WDR Program staff is responsible for regulating a wide variety of facilities that discharge waste to land. The program has had a significant shortage of resources for many years, and since the January 2005 informational item, has continued to regulate food processors in concert with all other land discharge sites. Staff prioritize their work on food processing sites based on known or suspected groundwater pollution, discharge of high strength waste, and discharge of a large volume of waste, and those sites for which the Regional Water Board has received complaints. Within the last year, staff have taken the following regulatory actions with respect to the approximately 520 food processors who discharge waste to land in the Central Valley Region:

   - Review Reports of Waste Discharge: 48 facilities

- Revise Monitoring and Reporting Programs: 7 facilities. These revised Orders may be found on the Regional Water Board web's site at http://www.waterboards.ca.gov/centralvalley/adopted_orders/index.html#Discharge.

- Prepare Waste Discharge Requirements for adoption by the Regional Board: 5 facilities. Adopted Orders are found on the Regional Water Board's web site at http://www.waterboards.ca.gov/centralvalley/adopted_orders/index.html#Discharge.

- Issue Notices of Applicability for coverage under Order No. R5-2003-0106 *A Waiver of Waste Discharge Requirements for Small Food Processors, Including Wineries*: 29 facilities. A listing of all facilities which have been enrolled under this Waiver is found at http://www.waterboards.ca.gov/centralvalley/adopted_orders/Waivers/NOAs-R5-2003-0106/index.htm.

- Issue other waivers or no further action letters: 3 facilities

- Issue new enforcement actions: 26 facilities. These totals include one Administrative Civil Liability, three Cleanup and Abatement Orders, and one Cease and Desist Order. A listing of all adopted major enforcement actions is found at http://www.waterboards.ca.gov/centralvalley/adopted_orders/index.html#Discharge.

- Continue to work on existing major enforcement actions: 11 facilities

In addition to the above, staff continue to review and comment on CEQA documents for new food processors; request RWDs for facilities that are currently discharging waste but never applied for WDRs or coverage under a waiver; review and comment on technical reports that are required by enforcement actions or WDRs; review monitoring reports; and complete inspections.

Economics

A final point should be made regarding the economics of complying with the regulations for waste discharges to land. Many food processors discharge their wastewater directly to POTWs (publicly owned treatment works; i.e., a city-owned wastewater treatment plant) instead of to private land. Those food processors discharging to POTWs typically pay fees that are directly related to their organic and suspended solids mass loadings, as well as to flows, and sometimes directly related to salt. These fees for treatment and disposal can represent a significant cost, which food processors discharging to private land without treatment may not bear. Additionally, POTWs may impose pretreatment standards that require the generator to remove BOD or suspended solids, adjust pH, remove salt, and/or remove other deleterious constituents. Many food processors that discharge to private land perform little or no treatment of the waste, although they do incur land and handling costs. Therefore, there may be an economic disparity within the food processing industry with regard to the cost paid for wastewater disposal when discharging to a POTW versus discharging to private land. When looking only at food processors discharging to land, those that manage their wastewater in a manner that protects water quality appear to be at a competitive disadvantage compared to those that do not. Unless food

processors that pollute groundwater and cause nuisance are subjected to penalties and costs of groundwater cleanup, an economic incentive will remain for non-compliance.

Conclusion

The self-monitoring reports submitted by food processing dischargers show that certain discharges of food processing waste to land has unreasonably degraded and/or polluted waters of the state. It is appropriate to regulate food processing sites in a manner consistent with existing State plans, policies and regulations such that the Regional Water Board fulfills its mandate to protect water quality. Given our limited resources, staff is working to effectively regulate food processing waste discharges to land, and is continuing to seek the cooperation of, and work with, industry representatives to achieve the necessary level of water quality protection.

WSW:1 March 2006